

Work Order ID 57326

April 6, 2010 1:25:52 PM



Page 1

Item ID: D315-668-012

Accept



Setup Start



Revision ID:

Stop



Item Name: Skidtube RH

Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: 14 Date: 10-4-06 Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D2904	Rev B								

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile & type labels per PPPD315-668-012 CHG 001

8/10/06/22

4/4 for CL 10/06/21

B-57326

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

Accept



Setup

Start



Revision ID:

Stop



Item Name: Skidtube RH

Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Run

Start



Stop



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

110

0.00



Skidtubes

Skidtubes

Memo

0.00

Skidtubes

LANDING GEAR RESOURCE 1

1-Cut D2904b to length as per dwg D2904

11/04/14

2-Drill aft and fwd cap holes as per dwg D2904 using DT8025 jig
(DO NOT OPEN TO FINISH SIZE)3-Drill saddle holes (6 Deg) as per Dwg D2904 using DT8938A jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)4-Drill GHW holes (3 Deg) as per Dwg D2904 using DT8938b jig
(ENSURE THAT LOCATOR RING IS SET FOR RH TUBE)5-Insert and cleco doublers and DT8938d in position. Transfer drill 256 holes
thru tube and doublers

6-Remove, identify batch # and orientation of doublers

7-C'sink rivet holes in tube 256 places as per dwg D2904 and deburr

8-Locate from saddle holes, drill wearplate holes using DT8994. Jig must be 1.7"
from aft end of tube (REF)9-Remove fwd and aft indexing ridges as per dwg D2904. Open fwd and aft cap
holes to finish size, scribe batch # at aft end of tube

10-Remove marks left from drill jig and deburr

10-4-14

11/05/14

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

Accept



Setup

Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run

Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

120



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Solder

0.00

Memo

(X)

130



HandFinish

Hand Finishing

Chemical Conversion Coat per QSI005 4.1
HandFinishing

0.00

Memo

Chemical Conversion Coat Tube & Doublers

0.00

1

4/10/5/5

140



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

(F)

BE 10/05/10

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
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NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

Accept



Setup

Start



Revision ID:

Stop



Item Name: Skidtube RH

Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run

Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150		0.00							
	Skidtubes								
Skidtubes									
Skidtubes									
	Memo	0.00							
	LANDING GEAR RESOURCE 1								
	1-Remove alodine around X-bolt holes on doublers								
	2-Rivet doublers as per dwg D2904.(DO NOT INSTALL RIVETS AROUND X-BOLT HOLES AT THIS TIME)								
	3-Open X-bolt spacer holes to finish size as per dwg D2904.(DO NOT USE CUTTING FLUID)								
	4-C'sink and deburr X-bolt spacer holes and prepare for welding								
	5-Blow all chips from inside tube.								
	6-Bond web in place per QSI 015. Allow 12 Hrs. cure time before cutting								
	Pick:								
	Qty <input type="checkbox"/> Part Number <input type="checkbox"/> Description <input type="checkbox"/> Batch								
	A/R <input type="checkbox"/> <input type="checkbox"/> Sikaflex-291 <input type="checkbox"/> M112429 <input type="checkbox"/>								
	Sikaflex expire date: 12/3/30								
	Start Time: 3:10 Date: 12/5/10								
	Fin Time: _____ Date: _____								

M 12/5/10

M 12/5/10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Item ID: D315-668-012

Accept



Setup

Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

160



Skidtubes

Skidtubes

0.00

Memo

0.00

LANDING GEAR RESOURCE 1

1-Weld crossbolt spacers D2909as per Dwg. D2904and QSI 004.
For D2579 spacers, weld one side, pass Y" drill, weld other side, pass Y" drill
A/R□□□ Aluminum Rod *m11250 7*

2-Grind welds as per Dwg D2909

3-Install remaining rivets arround X-bolt spacers, use rivet shaver as necessary

4-Deburr, inspect tube for any visible scratches

BE 10/05/11

) M101619

170



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

Solobor

44

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

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Setup

Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

QC10- Inspect visual per QSI004- ground welds

0.00



QC

Memo

0.00

Subtotal

Quality Control

0

190

Pressure Wash per QSI005 4.3

0.00



HandFinish

+ Reallocate as per PAR 09-043

Al 10/06/10

Memo

0.00

1

0

Hand Finishing

200

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Memo

0.00

POWDER COATING

Powder Coat White Gloss (Ref: 4.3.5.1) as per QSI 005 4.3

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

10:54
370°
11:25

0

10-6-10

Powder Coating

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

Accept



Setup

Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00

Required Date: 16/04/2010 Req'd Qty: 1.00

Cust Item ID:

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run

Start



Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210



QC

Quality Control

QC3- Inspect Part Finish

0.00

=> M 10/06/17

Memo

0.00

1

0

220



HandFinish

Hand Finishing

HandFinishing

0.00

Memo

0.00

HAND FINISHING RESOURCE #1

1-Install inserts & wearplates as per Dwg. D2904. Use a drop of Sikaflex on insert holes before installing wearplates

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 11/13/19

Sikaflex expire date: 11/10

3-Inspect for foreign object per QSI 024

4-Install 2646 Aft & fwd Caps as per Dwg D2904 and seal with Sikaflex. Clean excess adhesive

A/R ☐ ☐ ☐ Sikaflex-291 ☐ 11/11/19

Sikaflex expire date: 10/11

5-Wing Walk as per Dwg D2904 and QSI 005

4.4

Batch:

114432 M 10.06.17 ①

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 57326

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Item ID: D315-668-012

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Setup

Start



Revision ID:

Item Name: Skidtube RH

Stop



Start Date: 06/04/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run

Start



Stop



Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

230

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

8/26/10

Quality Control

10

240

Identify as per dwg & Stock Location: _____

0.00



Packaging

Memo

0.00

REV. A

Packaging

10/6/22

250

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/06/23

10-6-23

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Wednesday, April 14, 2010 7:38:06 AM

Page 1

Work Order ID: 57326

Parent Item: D315-668-012

Parent Item Name: Skidtube RH

Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 4/6/2010

Required Date: 4/16/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	--------------------------	---------------	----------------	--------

D2904B		Manufactured	No			110	Each	2.0000	1.0000			
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Skidtube, 315

Warehouse Loc Qty Loc Code

Location

Main Warehouse

LG

2

31826

1

36926

1

D2910		Manufactured	No			110	Each	42.0000	2.0000			
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Doubler

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST030

42

36927

42

D2911		Manufactured	No			110	Each	51.0000	2.0000			
-------	--	--------------	----	--	--	-----	------	---------	--------	--	--	--



Doubler

Warehouse Loc Qty Loc Code

Location

Main Warehouse

ST030

51

36928

51

B57330 ① 4/12/4/14

2 4/12/5/4

1 4/10/5/4

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:			WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

Wednesday, April 14, 2010 7:38:43 AM

Page 2

Work Order ID: 57326

Parent Item: D315-668-012

Parent Item Name: Skidtube RH




Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 4/6/2010

Required Date: 4/16/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
MS27039-1-08  Screw		Purchased	No			120	Each	1,826.000	54.0000			
<div> <div>Warehouse</div> <div>Location</div> <div>Main Warehouse</div> <div>ST291</div> <div>110552</div> <div>110835</div> </div> <div> <div>Loc Qty</div> <div>1826</div> <div>44</div> <div>1782</div> </div> <div> <div>Loc Code</div> </div>												
D2912  Doublor		Manufactured	No			150	Each	38.0000	2.0000			
<div> <div>Warehouse</div> <div>Location</div> <div>Main Warehouse</div> <div>ST030</div> <div>36929</div> </div> <div> <div>Loc Qty</div> <div>38</div> <div>38</div> </div> <div> <div>Loc Code</div> </div>												
MS20601-AD4W3  Rivet		Purchased	No			150	Each	228.0000	256.0000			
<div> <div>Warehouse</div> <div>Location</div> <div>Main Warehouse</div> <div>ST322</div> <div>111359</div> <div>113899</div> </div> <div> <div>Loc Qty</div> <div>228</div> <div>28</div> <div>200</div> </div> <div> <div>Loc Code</div> </div>												

x44 24 10/06/16
x10 24 10/06/16

2 11/05/14

PCR3212-403

1114450 88
1114436 168 644

11/05/10

170

Wednesday, April 14, 2010 7:38:43 AM

Shop Packet Print

Page 2

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:			WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D315-668-012 PAR #: _____ Fault Category: _____ NCR: Yes ☒ No ☐ DQA: / Date: 10.09.15
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR: 57326		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10.04.19	110	MS20601AD403 RIVETS ARE BREAKING DURING INSTALLATION	CP 10.04.19 051642	USE CR3212 CR3212-4-03 RIVETS. FSHEAR = 2400b FOR MS20601 FSHEAR = 6641b FOR CR3212	M MS/12	SP/09 10/04/19	CP 10.04.19 051642	C 10/04/19

NOTE: Date & initial all entries

Chris Provencal

From: Chris Provencal [cprovencal@dartaero.com]

Sent: April 19, 2010 1:32 PM

To: 'David Shepherd'

Cc: 'Mike Petsche'; 'Bill Beckett'; 'Dan Stow'

Subject: RE: Lama skidtube deviation

Per SR-D315-668 Rev. B, the shear strength of the MS20601AD4W3 was 240 lb. Per Cherrymax Rivet Data Sheet, the shear of a CR3212 is 664 lb.

According to Dan, this has been an issue for as long as he can remember, it's just that he would normally just replace the broken rivets without making an issue out of it. The stem is breaking inside the rivet instead of flush with the head.

-Chris

From: David Shepherd [mailto:dshepherd@dartaero.com]

Sent: April 19, 2010 12:03 PM

To: 'Chris Provencal'

Cc: 'Mike Petsche'; 'Bill Beckett'; 'Dan Stow'

Subject: RE: Lama skidtube deviation

As long as you are 100% confident that the rivets are stronger than what you analyzed to, then I am OK with the substitution.

Although we haven't made many Lama skidtubes, this is not the first time we've ever made these parts ... How did we ever make them before? Perhaps we were more skilled 5 years ago?

David

From: Chris Provencal [mailto:cprovencal@dartaero.com]

Sent: Monday, April 19, 2010 9:47 AM

To: 'David Shepherd'

Cc: 'Mike Petsche'

Subject: Lama skidtube deviation

David,

For D315-668-XXX Lama Skidtubes, they want to use CR3212 rivets instead of the MS20601AD4W3 rivets to attach the doublers. They're having to replace about 35% of the mil spec rivets because they break before being able to pull the doubler against the skidtube. They've started using the cherrymax rivets for a few of the doublers and haven't had to replace a single one.

Bill is OK with using the new rivets, the time saved should make up for the additional cost of the rivet.

Besides the obvious strength difference, the MS rivets are all-aluminum, while the cherrymax are aluminum exterior with an alloy-steel pin. Unless you have an objection, I'll sign off the w/o's (based on stronger rivet and that we've used them on other skids) and update dwgs.

-Chris

No virus found in this incoming message.

Checked by AVG - www.avg.com

Version: 8.5.437 / Virus Database: 271.1.1/2820 - Release Date: 04/19/10 06:31:00

2010-04-19

CHERRYMAX® RIVET SELECTION

MECHANICAL PROPERTIES

Materials		Ultimate Shear Strength	Maximum Temperature
Sleeve	Stem		
5056 Aluminum	Alloy Steel	50,000 PSI	250°F
5056 Aluminum	CRES	50,000 PSI	250°F
Monel	CRES	75,000 PSI	900°F
Inco 600	Inco X-750	75,000 PSI	1400°F

MINIMUM RIVET SHEAR & TENSILE STRENGTH (LBS.) IN STEEL COUPONS

RIVET DIAM.	SHEET THICK.	SINGLE SHEAR					TENSILE						
		ALUMINUM		MONEL		INCO	ALUMINUM		MONEL		INCO		
		Nom.	O/S	Nom.	O/S	O/S	Nom.	O/S	Nom.	O/S	O/S		
		3212	3242	3522	3552	3852	3212	3214	3242	3522	3524	3552	3852
		3213	3243	3523	3553	3853	3213	3224	3243	3523		3553	3853
		3214	3245	3524	3555		3222		3245		3555		
		3222	3246		3556		3223		3246		3556		
		3223	3252						3252				
		3224	3253						3253				
			3255						3255				
1/8 (-4)	2x.156	664	814	995	1220	1220	285	250	345	400	360	490	570
5/32 (-5)	2x.187	1030	1245	1545	1865	1865	445	390	530	635	555	740	860
3/16 (-6)	2x.219	1480	1685	2215	2525	2525	635	560	710	890	800	1000	1160
1/4 (-8)	2x.281	2615	2925	3920	4390	4390	1125	1000	1260	1570	1410	1755	2030

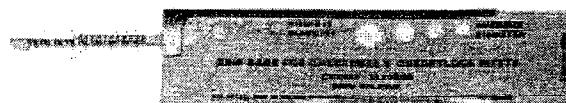
Values shown are fastener capabilities only. Design values will be limited by the bearing strength of the sheet material used.

GAGES

269C3 GRIP GAGE

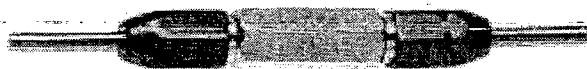
NATIONAL STOCK NUMBER 5210-00-255-7544

A simple, self-explanatory gage for determining material thickness and proper rivet grip length.



T-172 RIVET HOLE SIZE GAGE

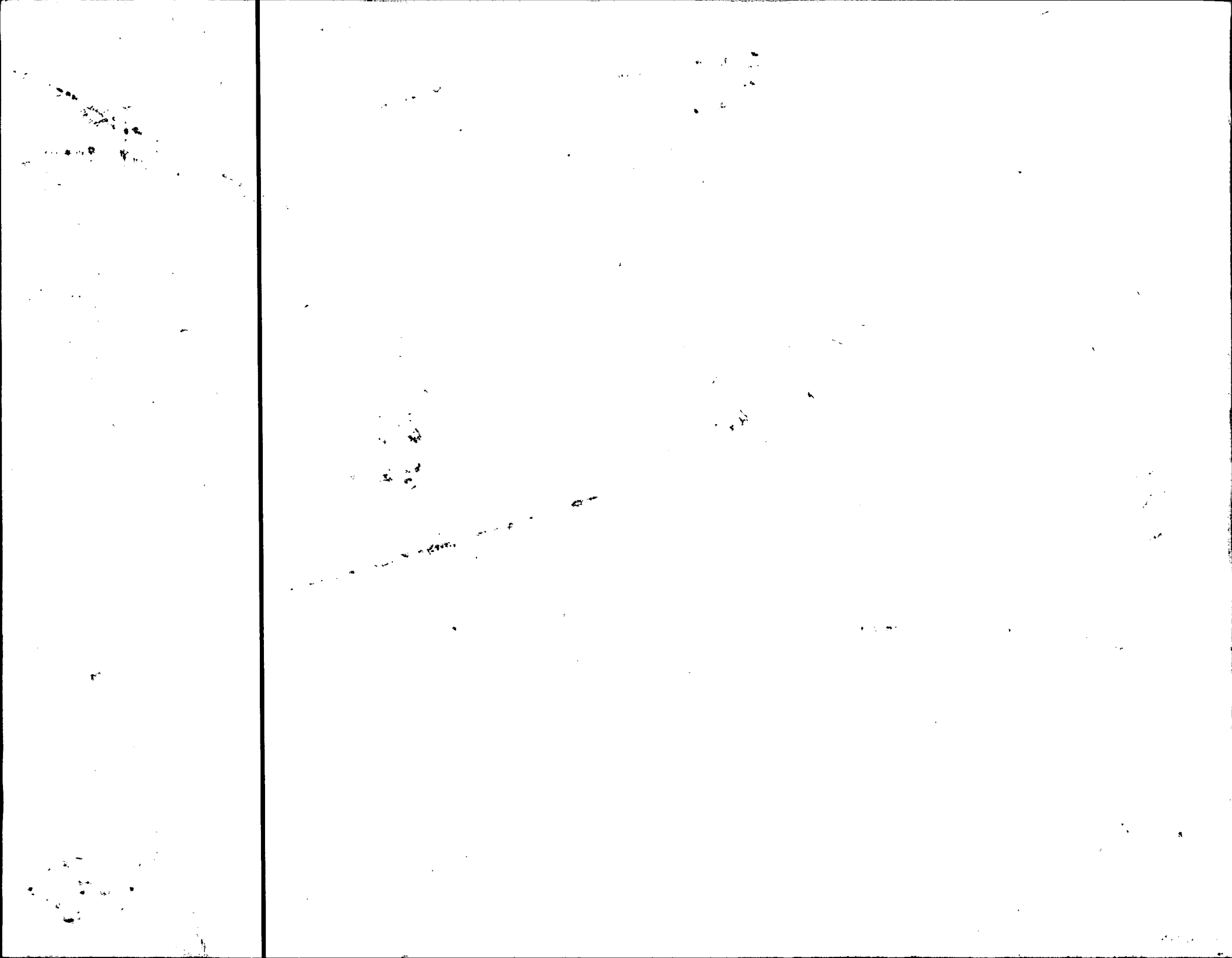
These are precision ground, go no-go gages used to check holes drilled for CherryMAX® rivets. They are made in both nominal and oversize rivet diameters.



RIVET DIAMETER	GAGE NUMBER	NATIONAL STOCK NO.	RIVET DIAMETER	GAGE NUMBER	NATIONAL STOCK NO.
1/8" Nominal	T-172-4	5220-00-478-4135	1/8" Oversize	T-172-400	5220-00-478-4137
5/32" Nominal	T-172-5	5220-01-021-3276	5/32" Oversize	T-172-500	5220-00-478-4140
3/16" Nominal	T-172-6	5220-00-478-4136	3/16" Oversize	T-172-600	5220-00-478-4141
1/4" Nominal	T-172-8	5220-00-478-4139	1/4" Oversize	T-172-800	5220-01-374-1340

ATTENTION

Blind rivets are not always a suitable substitute for solid rivets. Maintenance personnel are reminded that AC 43.13-1A chapter 2, section 3 stipulates: "Do not substitute hollow rivets for solid rivets in load carrying members without specific approval of the application by a representative of the Federal Aviation Administration. Blind rivets may be used in blind locations in accordance with the conditions listed in Chapter 5, provided the edge distances and spacings are not less than the minimum listed in paragraph 99d."



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Page 3

Work Order ID: 57326

Parent Item: D315-668-012

Parent Item Name: Skidtube RH

Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Date: 4/6/2010

Required Date: 4/16/2010

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2905		Manufactured	No			160	Each	0.0000	1.0000			
Web, 315 Skidtube												
ALS4-1032-130		Purchased	No			220	Each	40.0000	50.0000			
Insert												

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

ST282

40

M114654

X50 M 10/06/16

110511

40

220

Each

4,593.000 54.0000

AN960JD10L

Purchased

No

Washer

~~710AST149CO332R~~

Warehouse
Location

Loc Qty

Loc Code

Main Warehouse

ST348

4593

~~1114341~~

X54 M 10/06/16

110985

4593

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Page 3

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:			WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 4

Work Order ID: 57326



Parent Item: D315-668-012



Parent Item Name: Skidtube RH


Start Date: 4/6/2010

Required Date: 4/16/2010

Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2646  Aft Cap		Manufactured	No			220	Each	34.0000	2.0000			

Warehouse Loc Qty Loc Code

Location

Main Warehouse

1357332

FP6

28

52663

28

Main Warehouse

fp7

6

52663

6

D2648-3

Manufactured No

220

Each

40.0000

5.0000



Wearpad

Warehouse Loc Qty Loc Code

Location

OFFSHORE

FG

12

45316

12

Main Warehouse

FP17

28

52516

28

X2 9/1 10/06/10

X5 11 10/06/10

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Page 4

W/O:			WORK ORDER CHANGES					
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NOTE: Date & initial all entries

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Page 5

Work Order ID: 57326



Parent Item: D315-668-012



Parent Item Name: Skidtube RH

Start Date: 4/6/2010

Required Date: 4/16/2010

Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2656-13		Manufactured	No			220	Each	27.0000	1.0000			
Wearplate												

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
FP020	12	
57354	12	
Main Warehouse		
FP20	12	
55454	12	
Main Warehouse		
MEZZ	3	
44158	3	

D2656-33		Manufactured	No			220	Each	22.0000	1.0000			
Wearplate												

Warehouse	Loc Qty	Loc Code
Location		
Main Warehouse		
MEZZ	22	
43806	9	
46167	13	

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x1 10/00/16

x1 10/00/16

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

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Page 6

Work Order ID: 57326



Parent Item: D315-668-012



Parent Item Name: Skidtube RH


Start Date: 4/6/2010

Required Date: 4/16/2010


Comments: IPP Rev:A New Issue 07-04-12 JLM

Start Qty: 1.00

Required Qty: 1.00

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Remaining Qty To Pick	Qty Issued	Date Issued	Status
D2907  Wearshoe		Manufactured	No			220	Each	32.0000	1.0000			

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
FP	32	

D2909  Spacer, Lama		Manufactured	No			220	Each	129.0000	11.0000			
---	--	--------------	----	--	--	-----	------	----------	---------	--	--	--

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
LG	129	
12947	13	
14091	116	

yl 10/06/10

11 BE 10/05/10

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Page 6

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

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CHECKED <i>CP</i>	APPROVED <i>CP</i>	DRAWING NO. D2904	Rev. B SHEET 1 OF 3
DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY SCALE NTS	
A	99.09.09	NEW ISSUE	
B	00.06.21	CHANGED ANGLES FOR HOLES	

PARTS LIST:

Qty -041	Qty -042	Part Number	Description
X		D2904-041	LH SKIDTUBE ASSEMBLY
	X	D2904-042	RH SKIDTUBE ASSEMBLY
2	2	D2646	CAP
4	4	D2648-3	WEARPAD
1	1	D2648-5	WEARPAD
1	1	D2656-13	WEARSHOE
1	1	D2656-33	WEARSHOE
1		D2904-1	SKIDTUBE
	1	D2904-2	SKIDTUBE
1	1	D2905	WEB
1	1	D2907	WEARSHOE
11	11	D2909	CROSS BOLT SPACER
2	2	D2910	SKIDTUBE DOUBLER
2	2	D2911	SKIDTUBE DOUBLER
2	2	D2912	SKIDTUBE DOUBLER
50	50	ALS7-1032-130 or AKS4-1032-130 or ALS4-1032-130 or ALS7-1032-130	INSERT
54	54	AN960JD10L	WASHER
256	256	MS20601AD4W3	RIVET
54	54	MS27039-1-08	SCREW

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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 57326
0810-1105

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00.09.01 *CP*

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DATE 00.06.21		TITLE SA 315B SKIDTUBE ASSEMBLY SCALE 1:20	

GENERAL NOTES:

- Wb 57324*
1. TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
 2. MAKE D2904-1 AND D2904-2 FROM D2914 EXTRUSION (INITIAL LENGTH = 142.0).
 3. DAMAGE TOLERANCE ON BENDING:
THERE SHOULD BE NO VISIBLE WRINKLES IN THE BEND FROM THE GROUND TO A HEIGHT OF 7 INCHES ABOVE THE GROUND. NO GOUGING IS ACCEPTABLE IN THE FLAT PORTION OF THE TUBE. GOUGES UP TO 0.020 ARE ACCEPTABLE IN THE BENT PORTION OF THE TUBE. TUBE O.D. SHOULD BE 3.150 ± 0.010 IN THE FLAT PORTION OF THE TUBE. A MAXIMUM REDUCTION IN DIAMETER OF 0.150" IS ACCEPTABLE IN THE BENT PORTION OF THE TUBE.
 4. ALL HOLES DRILLED ON CENTERLINES EXCEPT THOSE NOTED BY SECTION C-C.
 5. DRILL #30 HOLES ($\varnothing 0.128$ REF) TO LINE UP WITH $\varnothing 0.128$ HOLES IN D2910/D2911/D2912 DOUBLERS. C'SINK $\varnothing 0.239 \times 100^\circ$.
 6. BOND D2905 WEB INTO D2904-1 (OR D2904-2) OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241/291 ADHESIVE PER DART QSI 015. ENSURE HOLES, LINE-UP.
 7. WELDING TO BE DONE PER DART QSI 004.
 8. AFTER DRILLING, BENDING, AND INSTALLING WEB & DOUBLERS, PERFORM THE FOLLOWING FOR $\varnothing 0.500$ HOLES ONLY:
 - CHAMFER HOLE $0.050 \times 45^\circ$
 - INSERT D2909 SPACER (11 PLACES)
 - WELD INTO PLACE
 - GRIND FLUSH
 - DRILL OUT SPACER TO $\varnothing 0.406$
 9. FINAL CONFIGURATION SHOULD HAVE THE FOLLOWING MINIMUM MECHANICAL PROPERTIES:
 - MINIMUM YIELD TENSILE STRENGTH = 35 ksi
 - MINIMUM ULTIMATE TENSILE STRENGTH = 38 ksi
 10. FINISH:
 - ACID ETCH, ALODINE ASSEMBLY PER DART QSI 005 4.1 PRIOR TO INSTALLING D2905 WEB AND D2910/D2911/D2912 DOUBLERS.
 - POWDER COAT WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3
 - BLACK ANTI-SKID PAINT AS INDICATED TO 1.0 ABOVE SKIDTUBE CENTER-LINE PER DART 005 4.4 (OPTIONAL).
 11. DRILL $\varnothing 0.297$ FOR ALS7-1032-130 INSERT USING DT8395 BEFORE FINISH. INSTALL ALS7-1032-130 INSERTS AFTER FINISH.

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00.04.01 *[Signature]*

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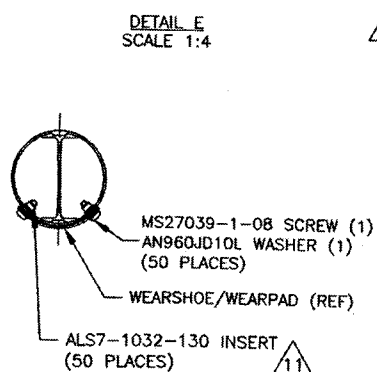
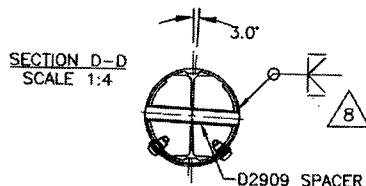
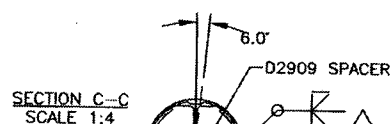
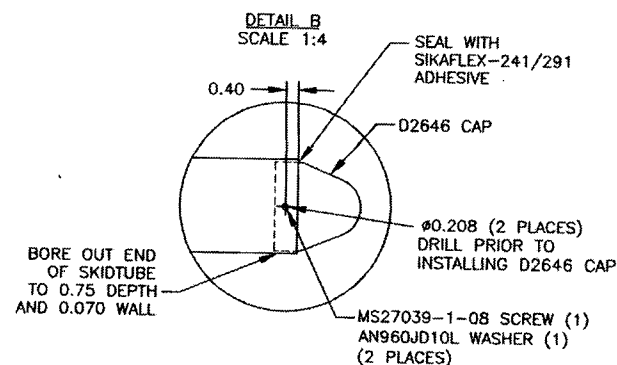
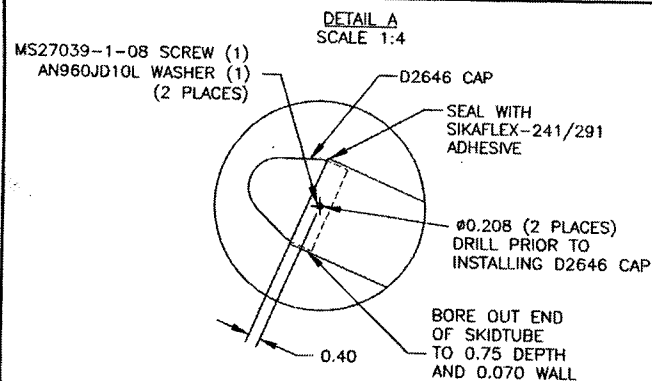
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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

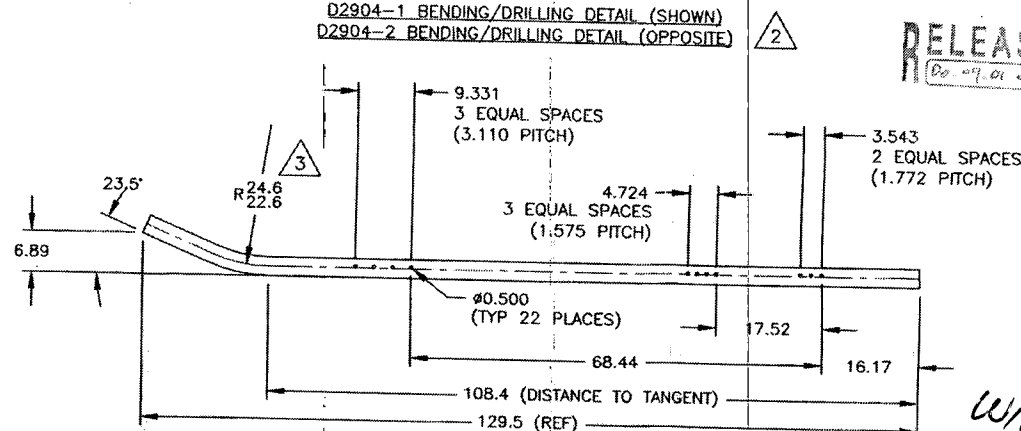
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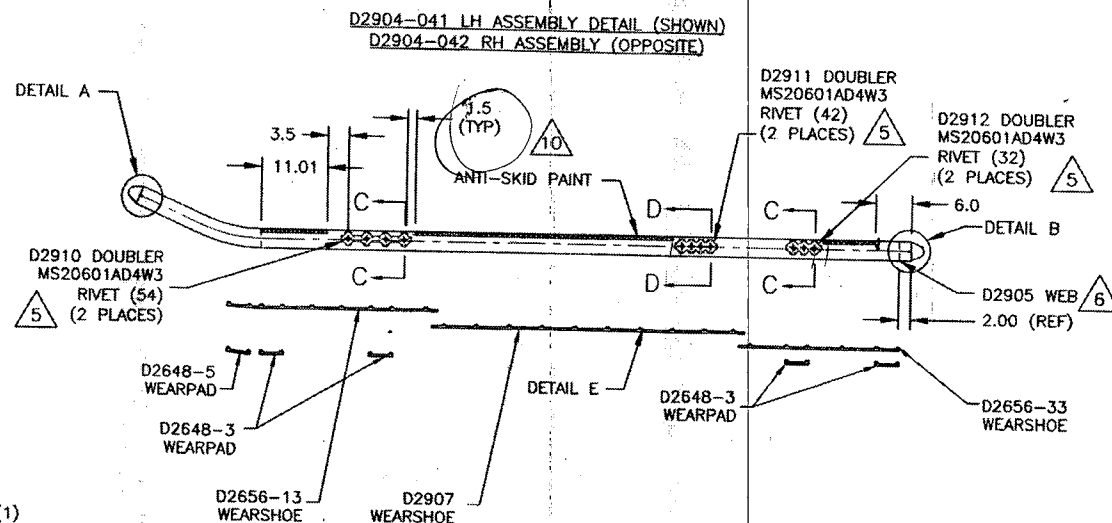
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D2904-1 BENDING/DRILLING DETAIL (SHOWN)
D2904-2 BENDING/DRILLING DETAIL (OPPOSITE)



D2904-041 LH ASSEMBLY DETAIL (SHOWN)
D2904-042 RH ASSEMBLY (OPPOSITE)



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		DATE	00.06.21	DRAWING NO.		D2904	SHEET 3 OF 3
				TITLE		SA 315B SKIDTUBE ASSEMBLY	SCALE 1:20

W/O:		WORK ORDER CHANGES						
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector	

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NO. 152

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Eliot
Job number: B36899
Part number: A315668011
Description: Skid tube (Lamin)
Welding Process: Tig[☒] Mig[]
Base material: Aluminum
Current: AC[☒] DC[]

TEST REQUIREMENTS AND RESULTS

Visual: pass[☒] fail[]
Penetration: pass[☒] fail[]

UNACCEPTABLE

Cracks: pass[☒] fail[]
Undercut: pass[☒] fail[]
Pin holes: pass[☒] fail[]
Overlap (cold lap): pass[☒] fail[]
Porosity (surface): pass[☒] fail[]
Coloration: pass[☒] fail[]

Qualifier David [Signature] Date of Test Coupon 08/04/24

Welder Barclay Eliot Date of Test Coupon 08/04/24

The above named individual is qualified in accordance with AWS D17.1.2001 to weld